

Environmental Information and Public Access System (EIPAS)

MassDEP's outdated and siloed information technology systems impede the Department from fulfilling its critical mission of protecting public health and the Commonwealth's natural resources. MassDEP's IT systems also do not currently facilitate permitting at the speed of business, using data to assess relative environmental risk, and sharing important information with other agencies, the business community, and members of the public. As a result, MassDEP's IT systems are not advancing key goals of the Patrick Administration — job growth, efficient use

of public resources, and civic engagement. As part of an overall reform effort that also includes regulatory streamlining and internal reorganization, MassDEP will adopt **a new way of doing business, and requires capital funding to develop a new set of online tools** to fulfill its mission.

Doing More with Less

Over the past decade, MassDEP has faced significant reductions in budget and staff. At the same time, its mandate has continued to increase.

- 2002: \$62M and 1,200 staff
- 2011: \$45M and 840 staff

Currently, highly skilled scientists and engineers are required to perform manual data entry and the systems they use do not make that data available to others across the Department, other agencies, and the public. Additionally, **aging infrastructure** causes applications to fail. These failures not only impact the Department's ability to do its

job, but also impose costs and delays upon the business community, who rightfully expect IT systems to work smoothly and efficiently, and frustrate the public, who expect easy access to public information.

New systems are needed to enable the Department to perform timely, predictable and cost-effective permitting, implement data-driven enforcement strategies, respond effectively to environmental threats, and make the wealth of environmental information that is collected more transparent and accessible to the public.

Current Challenges

Aging and siloed IT systems prevent MassDEP staff from being able to focus on the core mission of the Department

- Significant time is spent on data entry, manual processing, and responding to ad hoc inquiries.
- Siloed applications limit collaboration and information sharing across units and programs. For example, there are more than three water data systems for drinking water, groundwater and water management, making it impossible to have a holistic understanding of the water ecosystem.
- MassDEP cannot take advantage of new technologies, such as monitoring regulated facilities equipped with remote sensors to detect environmental violations, or using software to automatically spot permit violations from data submitted by regulated entities. For example, MassDEP staff now comb through 32,000 lab reports on drinking water to manually identify pollution limit exceedances; computer software could perform this same function in minutes. Similarly, MassDEP inspectors cannot use mobile applications to record inspection results and to provide real time information in the field.

Siloed Systems Means Siloed Information

"When I am heading out to inspect a facility, if I want to know what the Department knows about that facility I need to call ten people and ask. And that assumes I know who to call."
(MassDEP Inspector)

Doing Data Entry, Not Science

"Instead of analyzing samples, I spend far too much of my time entering data into systems." (Wall Experiment Station Scientist)

Maintenance and support consume the majority of critical IT resources

- There is limited ability to develop new solutions in response to policy and business changes (EEA/IT supports over 100 MassDEP legacy systems).
- The performance and reliability of core systems do not meet business expectations; critical public-facing systems are often down for days at a time.

Information is not captured and shared effectively

- Existing systems do not collect all the information needed for Federal and management reporting.
- Much of the information that is captured electronically is not readily accessible for decision-making. MassDEP IT systems are unable to completely and effectively provide the data needed to determine the compliance rates of regulated entities, the productivity of employees in issuing permits, or efficacy of different enforcement strategies.

Businesses and the Public Lack Access to Information

- Our laws, regulations, and prior permitting decisions are not readily accessible to businesses, so they do not know what to expect.
- Citizens cannot easily find out about environmental conditions in their neighborhoods or the environmental performance record of nearby facilities.

Manual Processes in an Automated Age

"It is frustrating to me that I cannot file many of my clients' applications online, or easily find on-line answers to how MassDEP interprets its rules and regulations. This makes permitting more time-consuming, unpredictable, and expensive for my clients." (Environmental Consultant)

The Way Forward

The EIPAS project recommendations and roadmap describe a new IT environment for MassDEP with a tightly integrated online system that enables the Department to utilize all of its environmental information in an cohesive and automated fashion. Efficient use of information is critical as the Department is increasingly required to do more with less. Once in place, this system and its components can be used by other agencies within the Secretariat, and other Commonwealth agencies that perform similar functions.

xFact recommends that MassDEP gradually phase out its siloed legacy systems, and replace those systems with an enterprise-wide, service oriented architecture that will enable common services to be reused or extended to support additional business needs across EEA. To ensure that MassDEP can take full advantage of technological change, xFact further proposes that MassDEP lay a foundation by standardizing key business practices and data across core business functions.

xFact believes that MassDEP has a high likelihood of success, because of the commitment of senior leadership from both the Department and the Secretariat to make major changes to MassDEP, the time expended by senior managers in MassDEP in identifying the current deficiencies, and a high level of engagement from outside stakeholders, including leading business executives from the Progressive Business Leaders Network.

With EIPAS in place, citizens will have access to vital environmental information; businesses will experience quicker and more predictable interactions with the Department; and MassDEP personnel will be able to make more informed decisions based on timely and accurate information.

EIPAS Benefits and Return on Investment

Reduced Uncertainty and Time to Business

- ✓ Quicker, more certain, interactions with MassDEP
- ✓ Shortened time from application submittal to permit decision

Improved Stewardship of the Commonwealth's Environmental Resources

- ✓ Quicker turn-around time from problem/violation identification to mitigation and resolution
- ✓ Increased compliance rates with permit and enforcement conditions
- ✓ Decreased time to return to compliance

MassDEP Staff Doing More with Less

- ✓ Reduced amount of time spent on data entry and administrative activities
- ✓ Quicker turn-around on environmental data and policy analysis requests
- ✓ Improved efficiency of the complaint follow-up and inspection processes

Increased Transparency and Civic Engagement

- ✓ Greater percentage of MassDEP information available online for businesses, partner agencies, and the public
- ✓ Decreased response time to citizen complaints and reported incidents
- ✓ Improved ability to solicit, receive, review, and publish public comments

Enhanced Collaboration with Other Agencies and Municipalities

- ✓ Improved processing of referrals to and from MassDEP
- ✓ Greater amount of structured information available for researchers, partner agencies, municipalities, and others
- ✓ Improved quality and timeliness of information sharing with the U.S. EPA

Improved Revenue Collections

- ✓ More timely collection of fees, fines, and other revenue
- ✓ Increased rate of collections for unpaid fees and fines

Continuing Benefits from Technology Investments

- ✓ Increased reuse of architecture and services
- ✓ Improved availability of systems and access to information
- ✓ Decreased overall staff burden on maintenance activities

EIPAS Future Usage Scenarios

The envisioned EIPAS is based on **integrated business processes**, focuses on **end user needs**, and promotes **online collaboration** and information sharing amongst MassDEP, regulated businesses and individuals, environmental stakeholders, and the public. Here are four example scenarios of how – once implemented – the EIPAS vision can fundamentally improve how environmental activities are conducted in Massachusetts.

Scenario 1: Online permitting

Navigating the permitting process

A business is interested in moving to Massachusetts and plans to open a new plant. Representatives of the business go online and quickly determine which types of permits the new plant will require and whether or not their planned activities are covered by the Massachusetts Environmental Policy Act (MEPA) or public comment processes. The business can view online and/or download a comprehensive package of instructions and guidance for each proposed permit and can schedule a joint pre-application conference to discuss their permit needs. The applicant can also quickly access similar permits that have been issued, and prior successful permit applications, to greatly reduce the uncertainty and risk of error.

Submitting an online permit

When completing permit applications online, information is entered once and used throughout the permitting process. The applicant can track the status of each application online and can view technical assistance and model applications specific to the needs of their planned facility. When there is a question of interpretation or ambiguity, the applicant can quickly contact the right individuals at MassDEP for clarification and guidance.

When ready to submit, the applicant can conduct a final online administrative review check and resolve any outstanding administrative issues with each application. Once submitted, EIPAS identifies the MassDEP permit review staff, provides a confirmation and tracking to the applicant and an expected timeline for permit issuance, and routes the applications to the inbox of the assigned MassDEP reviewers. Additionally, information is routed or shared with other involved stakeholders, including the MEPA Office, local planning boards, the Natural Heritage and Endangered Species Program (NHESP), MassDOT, and others as is appropriate for the nature of each application.

The applicant, as well as other authorized employees and environmental consultants, can track the status of the application online, view estimated milestone dates for the MassDEP review process, and respond to question and information requests.

Soliciting public comment

For those applications requiring public comment, EIPAS facilitates the public feedback process by helping publish the public hearing notice online, including details of the proposed permit. Those interested in the proposed environmental activities can review information online and submit information online for consideration in the permitting process. Online commenting gives the applicant a timely and cost-effective means of receiving and responding to public comment.

Issuing a permit

When the details of an approved permit application are finalized, the conditions are recorded in EIPAS and are available for the applicant and others to view online. Through this improved electronic process, the business saves time and money, MassDEP receives better, more informed applications, and the public and stakeholder agencies have transparent views of the permitting process and outcomes.

Figure 1: Example online permit application

MassDEP ABC Combustor Facility, Inc. Air Quality Permit Application

Logged in as: JANE-SMITH
[View My Other Applications](#) | [Help](#) | [Logout](#)

1. Draft 2. Share 3. Review 4. Sign-off 5. Submit 6. Pay Fee 7. Track

My Application [Prefill with info from my other applications](#)

Tracking No.: 123456 Permit Type: BWP AQ 03 Major CPA
Region: **MassDEP Central** [Contact MassDEP](#)
Status: **In Draft** [View status history](#)

Application Checklist

- ☒ Conduct pre-application conference with MassDEP
[Contact MassDEP](#) | [View notes from meeting](#)
- ☒ Complete the online transmittal form
[Update transmittal form](#)
- ☐ Complete application sections (in progress)
- ☒ Upload MEPA certification
[View document](#) | [Read about the MEPA process](#)
- ☐ Upload EFSB approval letter
[Upload document](#) | [Read about the EFSB process](#)
- ☐ Upload supporting documents (in progress)
[Manage documents](#)
- ☒ Locate my facility and sources on map
[View map](#)
- ☐ Include responsible official electronic signature
[Share application with official](#)
- ☐ Include professional engineer electronic attestation
[Share application with engineer](#)

Actions

- [Run administrative completeness check](#)
- [View 12 errors from last completeness check](#)
- [Manage my documents \(6 documents\)](#)
- [Share access with other users](#)
- [Share access with MassDEP](#)
- [Record notes](#)
- [View my other facilities and permits](#)
- [View my correspondence with MassDEP](#)
- [Contact MassDEP for assistance](#)

Quick Links

- [View instructions and technical assistance for air quality permit applications](#)
- [View fee schedule and payment information](#)
- [View air quality regulations and policies](#)
- [View model AQ Major permit applications](#)

Scenario 2: Improved monitoring and data sharing

Monitoring and responding to incidents

With an increasing use of remote sensing technology, environmental violations, equipment malfunctions, and other incidents can be identified in near real time. EIPAS can then send notifications to key MassDEP employees and others alerting them of the incident and allowing proper corrective action to be taken as soon as possible. MassDEP employees review the complete history of the facility, across media and permits, schedule a site visit, and provide technical assistance in identifying the cause and fix to the environmental incident.

Conducting site visits and inspections

While in the field, the MassDEP inspector uses a mobile device to locate the four companies scheduled for inspection that day and reviews information about each facility. The inspector uses the EIPAS mobile application to finalize each inspection checklist and to record the results during the inspections. The inspector can record an observed violation, including specifying its geographic location and capturing photos and other information supporting the violation. This information provides the content for EIPAS to generate a notice of noncompliance as part of the electronic record for the regulated facility. The inspector can also record follow-up items for providing technical assistance, for referrals to other MassDEP programs, and for milestones in returning to compliance.

Analyzing environmental trends

Using management dashboards, reports, and analytical tools, MassDEP directors and managers can view compliance trends geographically across the Commonwealth and across industries. MassDEP can use this information to improve internal training, target technical assistance, measure the efficacy of different enforcement and compliance assistance approaches, and understand the underlying factors contributing to trends in environmental activity. Additionally, using these management views, MassDEP can better understand and triage enforcement activities.

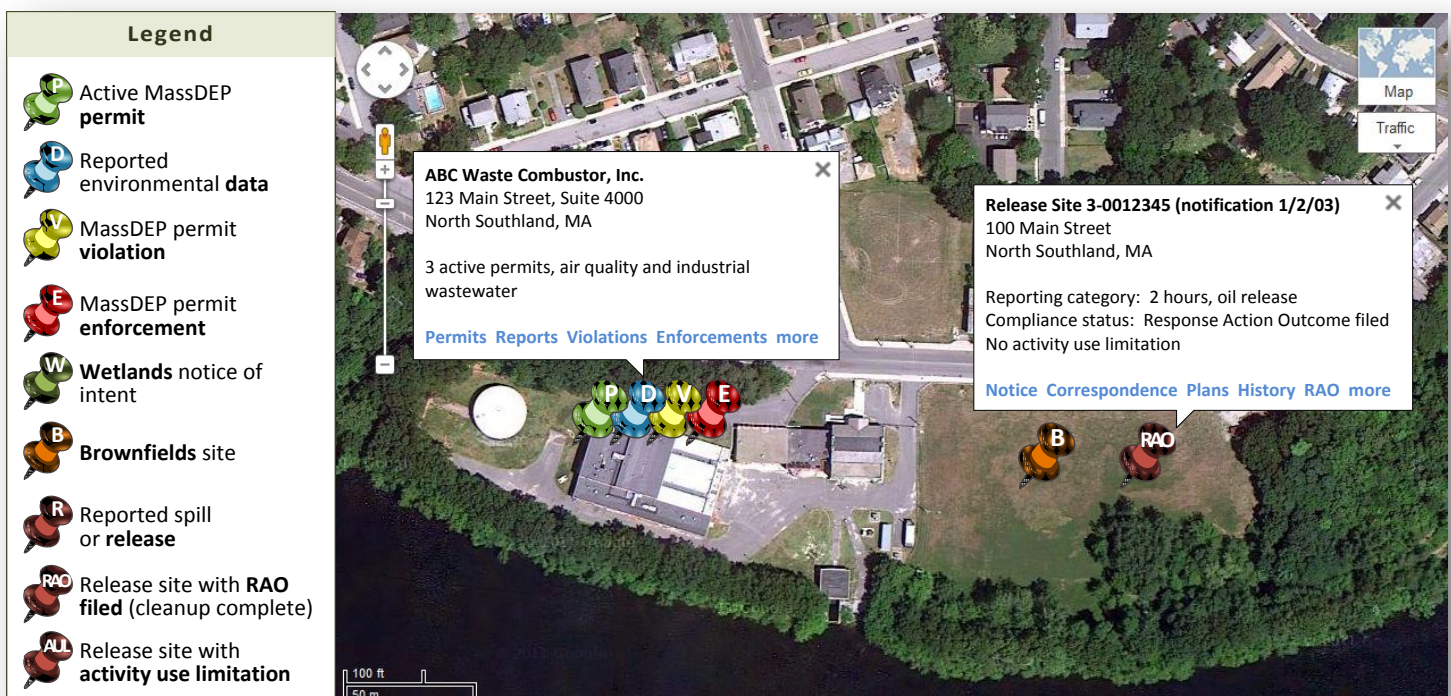
Understanding the state of the environment

Citizens can view EIPAS information online, including using a geographic map to see all regulated facilities and release sites within, e.g., a 10 mile radius of their home, work, or school. The public user can then click to see the nature of each permitted activity, the compliance history of the facility, and the status of any MassDEP enforcement actions. In addition, the citizen can subscribe to notifications of future activities in their community, including new permit applications, enforcement activities, or releases.

Enabling involvement in protecting the environment

The envisioned EIPAS also supports the electronic submission of citizen tips and complaints and interagency referrals of potential environmental issues. Using a mobile app, a citizen can take a photo of a potential toxic release in a stream, specify the geographic location, and submit the complaint to MassDEP for follow-up. A MassDEP inspector can then quickly review the complaint and view potential sources for the environmental incident using geographic information system tools. Together, this collaboration with concerned citizens extends MassDEP's eyes and ears in the environment.


Figure 2: Sample geographic area environmental activity search



Scenario 3: Regulated entity portal landing page

A third key scenario for the potential future use of online environmental information is the management of a facility's, or network of related facilities', information on the web. The example below depicts a hypothetical landing page for a municipal waste combustor regulated entity. An authorized representative of the regulated entity or an environmental consultant working on behalf of a regulated entity would be able to securely log on and view summary information about each of the MassDEP permits held by this entity. In the example below, the municipal waste combustor has both air quality and industrial wastewater permits. The user could quickly view the status of each permit, navigate to see the details of each permit (including specific conditions), pay annual compliance fees, and view previous filings.

Figure 3: Regulated entity portal landing page

**MassDEP** Regulated Entity Portal
Department of Environmental Protection

Logged in as: **JANE-SMITH**
[My Account](#) | [Help](#) | [Logout](#)

My Notifications

[Manage My Subscriptions](#) | [View More Notifications](#)

- Municipal Waste Combustor Regulations Posted for Comment
[View Notification](#)
- MWC #12345-EU2 Reported Pollutant/Parameter Carbon Monoxide in excess of applicable limit 100 from 04:00 to 08:00 on January 16, 2012
[View Notification](#)
- Annual compliance fee of \$175 for BWP IW38 (W123456) is due on January 31, 2012.
[View Invoice](#) | [Pay Fee Online](#)
- MassDEP inspection is planned for Friday, February 10, 2012.
[View MassDEP Site Visit Prep Guide](#)


My Facilities & Permits

[View Other Locations](#) | [Manage Facilities](#)

123 Main Street, North Southland, MA
[Manage Facility Information](#) | [Maintain Key Personnel](#)

- Municipal/Waste Combustor, Air Quality OP (Fac #12345-EU1) - Active
[View Permit Details](#) | [View Previous Filings](#) | [Pay Fees](#)
- Municipal/Waste Combustor, Air Quality OP (Fac #12345-EU2) - Active
[View Permit Details](#) | [View Previous Filings](#) | [Pay Fees](#)
- Ind. Wastewater Sewer Connection, BWP IW38 (W123456) - Active
[View Permit Details](#) | [View IWPS Diagram](#) | [View Previous Filings](#) | [Pay Fees](#)

123 Main Street, North Southland, MA
[Confirm My Locations](#)



Quick Links

- [Contact MassDEP](#)
- [Find or Request Technical Assistance](#)
- [Manage User Access to My Facilities](#)
- [Update Online Filer Information](#)
- [Pay Annual Compliance Fees](#)
- [Submit Air Quality Forms](#)
- [Submit Ind. Wastewater Sewer Connection Forms](#)

Additionally, the user could view notifications and reminders sent by MassDEP users or the EIPAS. The examples included in this scenario show notifications about proposed regulatory changes related to permits held by this regulated entity, reminders to submit annual compliance fee payments, and information about an announced, upcoming MassDEP site visit. This example also shows how geographic information views could be integrated with other regulated entity online information. Here, the user could view the selected facility, view other related facilities, and confirm the geographic coordinates of key environmental locations, such as emission sources, underground storage tanks, release locations, and other geographic points.

Finally, from this sample landing page, the user could quickly navigate to other information available to this user and his or her regulated entity. The user could find or request technical assistance online, quickly find out how to contact the right individuals or programs at MassDEP, manage user access to their online information, control who can file information on behalf of the regulated entity, pay fees, and submit online forms, among other envisioned online functionality.

Scenario 4: MassDEP supervisor dashboard

The final scenario focuses on the day-to-day management of environmental activities by MassDEP staff. The example below depicts a hypothetical dashboard for a MassDEP program supervisor. When logging onto EIPAS, the supervisor would be able to view a dashboard of information, links, and statistical indicators. A dashboard similar to the one depicted in Figure 4 below could be used as a home page for supervisors and other staff members. This example also shows menu navigation at the top of the page to allow navigation to additional system functionality, including searches, tasks, approvals, notifications, calendars, reports, and the MassDEP Knowledge Base.

Similar to the example of the regulated entity landing page, the supervisor dashboard includes highlighted, unread notifications directed to the user. While the management of notifications might be conducted elsewhere, a supervisor would be able to use this quick view to see what new events have occurred with their regulated entities, new announcements issued from the region or the Commissioner's Office, and many other types of notifications and reminders envisioned for the EIPAS and documented in the Business Component Architecture.

Also from this example dashboard view, the supervisor would be able to quickly see a calendar of upcoming events, including events scheduled for the Department (e.g. holidays) and the Regional Office (e.g. staff meetings). He or she would also be able to view personal scheduled activities, such as participation in upcoming inspections or staff training. The supervisor would also be able to quickly navigate to view the schedules of their staff when planning meetings and assigning tasks.

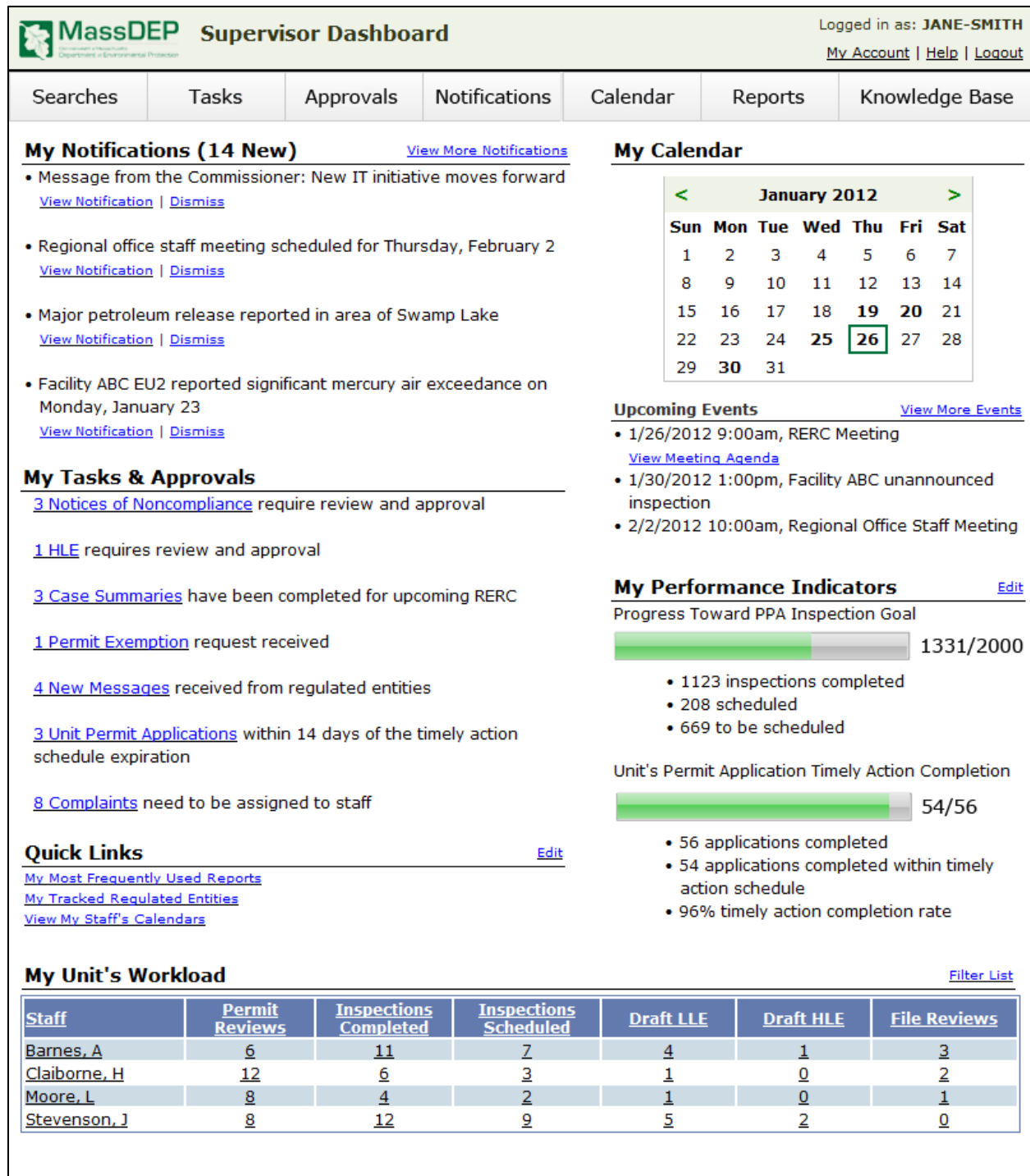
The example below also depicts summaries of tasks and approvals that are outstanding. Under the "My Tasks and Approvals" section, the supervisor could quickly see the number and types of outstanding activities that require his or her attention. These items could also be reassigned to other staff members, and there is an example of how unassigned task items can be tracked for assignment, so no activities are forgotten.

Related to the personal tasks and approvals is a more aggregate graphic view of key performance indicators relevant to this supervisor's activities. Here, two example performance indicators are depicted – one showing the program's progress toward a specific goal established by the US EPA, and the other shows the unit's performance concerning the timely processing of permit applications. These are examples of how information that would otherwise require a user to run a report or perform ad hoc data analysis could be formatted in quick views that could be used across MassDEP programs and roles to inform agency decision making in a more timely manner.

One of the final two sections on this example is frequently used links, or "Quick Links", that allow a user to swiftly navigate to other areas of the application that are of recurrent interest. This example shows quick links to the user's most frequently used reports, information about assigned or tracked regulated entities, and information about the unit's activities and calendars.

The final section is a table that summarizes information and provides access to specific details. This example lists the staff supervised by this user and provides aggregate information about the workload of each individual, including the number of active permit reviews, the number of recently completed inspections (perhaps with inspection reports still being drafted), the number of upcoming inspections, the numbers of violation notices being drafted by each individual, and the number of planned file reviews. These are examples of the types of workload numbers a supervisor might be interested in tracking.

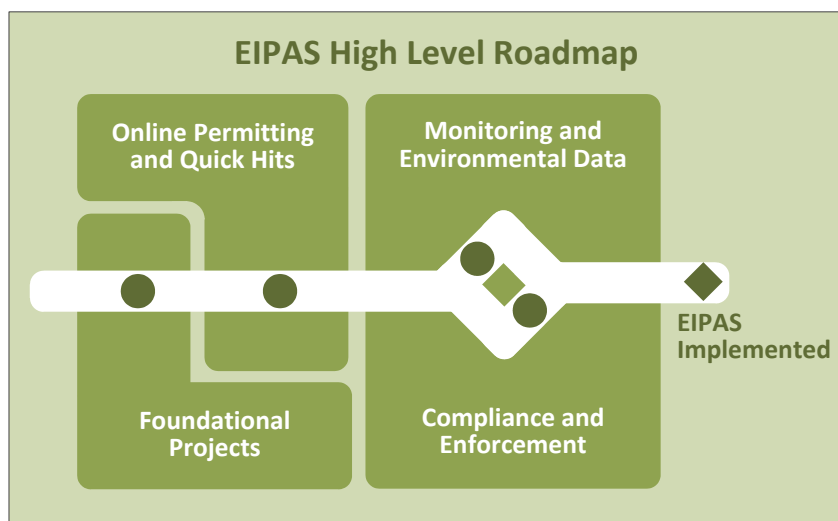
Figure 4: MassDEP supervisor dashboard



The example table in the “My Unit’s Workload” section also depicts navigation to the underlying details of the unit’s workload. For instance, if the manager wanted to see all of what Abigail Barnes was working on, he or she would click the row header “Barnes, A”. If the supervisor wanted details about all draft high level enforcements, he or she would click on the column header “Draft HLE”. Similarly, if the supervisor wanted details about the HLE being drafted by Abigail Barnes, then he or she could click the “1” in the Draft HLE column for “Barnes, A”.

The EIPAS Roadmap to the Future

The Environmental Information and Public Access System (EIPAS) project will bring dramatic and continuous improvement, as existing legacy systems are replaced by a tightly integrated online system. The system will include new integrated features and functions for the public, regulated entities, environmental professionals, Commonwealth partners, Federal oversight agencies, Department staff, and other stakeholders.



The EIPAS Phase II Roadmap includes five project threads, each including a roadmap visual, list of projects, and list of activities to implement each project. These project threads include:

Foundational Projects

1. Governance and Business Foundational Projects
2. Technology Foundational Projects

Implementation Projects

3. Online Permitting and Quick Hits Projects
4. Monitoring and Environmental Data Projects
5. Compliance and Enforcement Projects

Together these five project groups include 52 distinct recommended projects with hundreds of individual activities to be accomplished for their successful implementation. Among the 52 projects are 17 development projects (including one proof-of-concept project) and four optional development projects.

